# Automatic Filter Scanner for Testing of HEPA and ULPA Filters acc. to EN 1822-4 / ISO 29463-4

# AFS 150

Automated HEPA/ULPA Filter Scanning Test System

## Principle

The test filter clamped in the filter holder is passed by a test volume flow and charged with a test aerosol. Leak detection and filtration efficiency measurement is performed automatically. The relevant test data and results are logged.

The system works in overpressure mode. The test air is taken from the ambient air and purified by a HEPA filter after passing through the flow measuring device. Behind the filter to be tested, the scanning traverse is located with the sampling probe of the downstream particle counter.

The data acquisition as well as the control of the entire system is done by the PC placed on a separate movable computer desk.

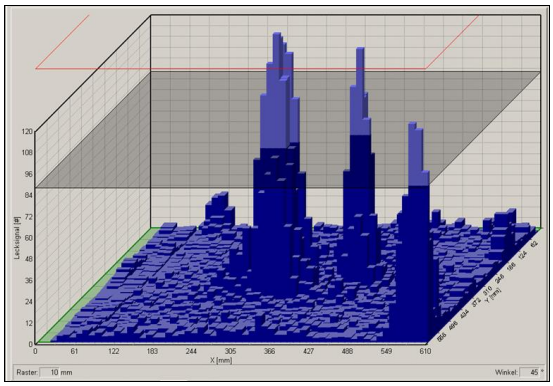
Throughout the whole testing process (scan) unfiltered air and clean air concentrations are measured continuously, each with a separate particle counter. On the basis of particles counted during the test on the downstream side (clean air side) of the test filter the total filtration efficiency is calculated and possible leaks graphically displayed.

## Special Advantages

- Automated test protocols acc. to ISO 29463-4 / EN 1822-4, ISO 14644-3, IEST-RP-CC034 possible)
- Automatic test report generation as a proof of quality in the filter manufacturing - even for the low-cost filter scanner version with manual testing
- Flexible “plate in plate” adapter solution for different filter dimensions
- Automatic adjustment of dilution and aerosol generation depending on filter class, flow rate
- Customized data or test protocols available
- Convenient control and data acquisition software AFS150Win®

## Applications

- Quality control and assurance in filter production
- For automated testing of high-efficiency air filters according to ISO 29463-4 (EN 1822-4 scan-test, local efficiency), ISO 29463-5 (EN 1822-5 integral efficiency), air velocity and ISO29463-3 (EN 1822-3 fractional efficiency of filter media; with additional module AFS 153)



Graphical representation of local filtration efficiency in the software AFS150Win® potential leaks are easy to recognize.

## Specifications

### Details

Depending on the dimensions of the filters to be tested, the corresponding numbers, human resources and other customer constraints, the appropriate scanner version can be selected and specified:

Using the automatic filter scanner **AFS 150** the filter is hermetically sealed and clamped against an adapter plate in a test chamber (filter holder cabinet). For the conversion to a different filter size the adapter plate must just be changed. The handling of large filters is facilitated by the fact that the test filter can easily slide on rollers into the test chamber.

The manual filter scanner **AFS 152** can be integrated into existing leak detection systems. In this scanner version the sampling probe is manually moved across the entire filter or the sections to be tested. In this cost-effective solution as well as with the automatic scanner version, the software determines and records the clean air particle concentration, the coordinates of the sampling probe and the scanning speed.

The leak detection in all scanner models is done with a particle counter. Thus, a higher reliability and accuracy is achieved than in case of using a photometer.


Manual filter scanner AFS 152 (left) and filter media tester AFS 153 (right)

### Technical Data

| | |
|---|---|
| Filter dimensions (W x H x D) | min. 305 x 305 x 50 mm<br>max. 1830 x 1220 x 300 mm |
| Filter Classes | H13 – U17 |
| Flow rate | 120 ... 5000 m³/h |
| Filter face velocity | 0.45 m/s |
| Differential pressure | 0 ... 1000 Pa ±0.2% |
| Aerosol materials | DEHS, PAO (Emery 3004), DOP [2)], PSL, NaCl, KCl |
| Scan traverse | 3 PLC controlled axes, DC precision motors, positioning accuracy and repeatability: better than 1 mm |
| Scan speed | 5 .. 100 mm/s |
| Sampling probe | 2 .. 4 downstream probes<br>30 × 30 mm or<br>14 × 65 mm<br>others on request |
| Compressed air supply | 6 bar |
| Power supply | 3 × 400 V AC, 100 A, 50/60 Hz, 45 kW |
| Space required L x W x H | 10 × 5 × 3 m |

[2)] In the Globally Harmonised System (GHS), DOP is classified as a hazardous substance. DEHS or PAO (Emery 3004) are recommended as a replacement for DOP.